



12 DEC 1957

MEMORANDUM FOR: Office of Training
FROM : Deputy Comptroller
SUBJECT : Report on Special Conference on Operations Research
Conducted by the American Management Association
At Chicago

1. The undersigned attended the Special Conference on Operations Research conducted by the American Management Association at the Palmer House, Chicago, 25-27 November 1957.

2. It was considered advisable for the Deputy Comptroller to attend this Special Conference, since it has been observed by the Office of the Comptroller that operations research is being used more and more extensively by certain agencies of the Government and by industry in solving various complex problems of Government and business. Operations research is a subject which a great many people have heard about but which comparatively few can define. It is a subject in which there is a great deal of confusion. As one authority on the subject says, "If 1955 can be recorded as the year in which everyone talked about automation without knowing very much about it, and 1956 as the year in which automation ceased to be a mystery and became an accepted part of the business man's working knowledge, then it might fairly be said that operations research stands today where automation did a year ago."

3. Operations research arose in the course of World War II in the military establishments, principally in determining the most practicable and most efficient ways of utilizing military equipment. Since World War II there has been a steady growth in the business of supplying operations research to military and other customers, and the operation research technique is now being utilized in much broader problems than during the World War II period. According to the information obtained from the speakers at the conference, industry is successfully utilizing operations research in determining improvements and economies with respect to many operations, including, but not limited to, production, distribution, transportation, inventory, and forecasting. Also, industry has effectively utilized operations research in budgeting and accounting, but not as extensively as with respect to such problems as production, transportation, inventory, etc.

4. A simple definition of operations research is "scientific method applied to complex problems of business." To further simplify this definition, operations research should be described as the application of mathematical formulas to operations of businesses or agencies in order to effect simplification, economy, and improvement or reshaping of traditional patterns. Obviously, and as indicated by the representatives from industry participating in the conference, the operations research technique requires the utilization of one or more highly qualified mathematicians, preferably those who have taken an operations research course of instruction at one of the universities such as M.I.T. The experience of the representatives of industry has been that a separate operations research staff should be established at a level in the organization which will receive support from the top of such organization in its endeavor. In other words, such a staff should not be a part of the Comptroller's Office, the Management Staff, or any other already existing component, principally due to the specific qualifications required to perform the task.

5. It was disclosed during the conference that operations research is progressing and developing more rapidly today than in the past, due to the success experienced by various components, but also due to the development of electronic computers and the use that an operations research staff can obtain from such computers in the development of complex mathematical computations. In many instances, companies use electronic computers which they have obtained for other purposes, and in other instances they purchase time on computers that are available in companies other than their own.

6. Some of the industries in attendance and which took part in leading the Special Conference were: Lockheed Aircraft Corporation, Union Carbide Corporation, United Air Lines, British American Oil Company Limited, The Ohio Rubber Company, Westinghouse Electric Company, General Electric Corporation, The Prudential Insurance Company of America, Ryerson Steel Corporation, and The Port of New York Authority. There were also several representatives from Army, Navy, and the Air Force in attendance and one other representative from CIA, [REDACTED] from OSI.

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7. It is the conclusion of the undersigned, from having attended the conference, that operations research can only be effectively utilized in solving large complex problems where there is a possibility of a large dollar saving, despite a small percentage of change in operational methods, documents, etc., and where the use of mathematics is appropriate due to the complexities and variables involved in the problems. In CIA operations research could probably be utilized in the DD/I area where there is a complex problem concerning collection, production, and distribution of intelligence. Also it is conceivable that it could be applied to our Logistics problems, particularly with

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respect to determining appropriate inventory levels, and the optimum point of purchasing and distribution. Probably there are also other areas of operation within the Agency which could benefit from such an approach.

8. In order, however, to utilize operations research in the Agency, we would have to establish an appropriate staff of mathematicians educated in operations research, and prior to establishing such a staff there should probably be a feasibility study to determine whether certain programs would lend themselves to the operations research approach or techniques. Industry handles this problem in many instances by contracting with a consulting firm which has experts in the field of operations research, and while some Government agencies could take this approach, for security reasons this might not be practical with respect to CIA.

9. It is, therefore, my recommendation that we continue to observe the developments in Government and industry with respect to operations research with the viewpoint that at some future date we may wish to actually engage in such an approach to some of our problems. It would not surprise me if, within the near future, the Budget Bureau obtained an operations research expert and commenced to encourage an operations research staff in certain agencies.

10. I found this conference to be extremely interesting and beneficial to me. While I do not profess to understand the mathematical formulas and techniques which would be applied by a highly qualified mathematician, as a result of the conference I have a much better understanding of the purpose and scope of operations research and its possibilities to an agency such as CIA.

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